Washington State Department of Transportation

9/11/2023

Monitoring Report

Site Details

Site ID: 996735 Road Name: SR 3 Mile Post: 26.00

Stream: unnamed Tributory to: Mindy Cr

Monitoring Inspection Details:

Inspection Type: Post-construction Inspection Date: 9/27/2017

Inspector(s): Damon Romero

Post Construction Information

Structure conforms to permits and plans? Yes Structure Type: Culvert

Structure comments:

Alignment/configuration conforms to permits and plans? Yes

Alignment comments:

Dimension conforms to permits and plans? No

Dimension comments:

Structure slope changed during installation but not reflected on as-builts.

Bridge/Culvert Span (ft): 10.00 Structure Length (ft) 118.40 Structure Rise (ft): 5.00

Streambed Slope (%): 5.21 Culvert shape: Rectangular Culvert Material: Precast Concrete

Culvert Shape Material Comment

Streambed channel conforms to permits and plans?

Streambed Material: Yes Streambed Shape/Flow: Yes Streambed Slope: No

Post-Construction stream channel Comments:

Do other Design Features (LWM, coarse bands, barbs, preformed pools, etc) conform to permits and plans?

Additional Details:

Monitoring Parameters (all intervals):

Streambed Material

Has the Site experienced a bankfull event? No

Is there streambed material throughout the Structure? Yes

Is there streambed material throughout the Design Channel? Yes

Freeboard at outlet (ft) at inlet (ft)

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Compare the streambed material throughout the structure and design channel to the common condition: Coarser

Streambed Material Comments:

Fines and small gravels dominate the project reach with larger cobbles present in the streambed in the upstream ravine.

Channel Flow / Shape

Is there unusual subsurface flow compared to the common condition of the reach? Yes

Does a low-flow channel exist through the entire length of the structure and design channel: Yes

The depth of the channel throughout the structure and the design channel compared to the common condition of the reach is: Similar

The channel shape throughout the structure and the design channel compared to the common condition of the reach is: More Plane Form

Is the channel shape consistent with the design expectations? Yes

If No or Undetermined, explain:

Describe the channel path within the structure and the design channel: Straight Line

Does the channel contact the structure wall at any location? No

If yes, the percentage of channel length in contact is:

Also, if yes, contact is:

Is there a measurable BFW inside the structure?

Bankfull Width (BFW) of the channel within the structure: (ft) 6.40

BFW inside the structure compared to the design channel: Significantly narrower

BFW inside the structure compared to the common condition: Significantly wider

BFW of the design channel compared to the common condition is:

There is a defined channel: Through the entire project.

Channel Additional comments:

Streambed Slope

Streambed Slope (%) Upstream of the Structure: 9.70 Throughout the structure: 5.21

Downstream of the structure: 9.33 Overall project:

Describe streambed slope throughout the project compared to the common condition of the reach: Similar

Streambed Slope Compared to Reach Comments:

Streambed Slope Comments:

Overall project slope is similar to common condition but box culvert is flatter slope than common condition.

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Other Details

Are there any Channel-Spanning hydraulic drops within the structure or the design channel greater than 0.50 feet? No

If Yes, provide comments, including descriptions of any headcutting or aggrading:

Do other Design Features (LWM, coarse bands, barbs, preformed pools, etc) function as intended? No

Features Comments:

Photos taken during inspection? Yes

Final Determination

Is the structure Fish Passable? Yes

Risks noted to stream function, refer to category:

Actions determined by Monitoring: Increased Monitoring

Inspection Action Comments:

Additional Comments:

Seven coarse bands US of culvert, 13 coarse bands DS of culvert, coarse bands every 20' inside box culvert- all coarse bands shown on plans. First coarse band 5' upstream of culvert is most prominent, approximately 5' long (stream length) and creates very steep flow cascading over one-man rock. No hydraulic drop observed by WSDOT or WDFW bios on 9/27/17 but potential for hydraulic drop to develop. Site failed WDFW Level A analysis due to bed depth <20% at DS apron. Lvl B passed.

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Site Details

Site ID: 996735 Road Name: SR 3 Mile Post: 26.00

Stream: unnamed Tributory to: Mindy Cr

Monitoring Inspection Details:

Inspection Type: Over-winter Inspection Date: 6/12/2018

Inspector(s): Damon Romero,Tammy Schmidt

Monitoring Parameters (all intervals):

Streambed Material

Has the Site experienced a bankfull event? No

Is there streambed material throughout the Structure? Yes

Is there streambed material throughout the Design Channel? Yes

Freeboard at outlet (ft) at inlet (ft)

Compare the streambed material throughout the structure and design channel to the common condition: Coarser

Streambed Material Comments:

Channel Flow / Shape

Is there unusual subsurface flow compared to the common condition of the reach? Yes

Does a low-flow channel exist through the entire length of the structure and design channel: Yes

The depth of the channel throughout the structure and the design channel compared to the common condition of the reach is: No Flow at this time

The channel shape throughout the structure and the design channel compared to the common condition of the reach is: More Plane Form

Is the channel shape consistent with the design expectations? Yes

If No or Undetermined, explain:

Describe the channel path within the structure and the design channel: Meandering

Does the channel contact the structure wall at any location? No

If yes, the percentage of channel length in contact is:

Also, if yes, contact is:

Is there a measurable BFW inside the structure?

Bankfull Width (BFW) of the channel within the structure: (ft) 4.50

BFW inside the structure compared to the design channel: Significantly narrower

BFW inside the structure compared to the common condition: Similar

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BFW of the design channel compared to the common condition is:

There is a defined channel: Through the entire project.

Channel Additional comments:

46% bed depth at outlet but only 9% (0.5') at end of apron. BFW US = 5.5'

Streambed Slope

Streambed Slope (%) Upstream of the Structure: 8.64 Throughout the structure: 5.43

Downstream of the structure: 6.76 Overall project:

Describe streambed slope throughout the project compared to the common condition of the reach: Other

Streambed Slope Compared to Reach Comments:

Streambed Slope Comments:

Project slope is similar to upstream natural channel but steeper than downstream natural channel.

Other Details

Are there any Channel-Spanning hydraulic drops within the structure or the design channel greater than 0.50 feet? No

If Yes, provide comments, including descriptions of any headcutting or aggrading:

Do other Design Features (LWM, coarse bands, barbs, preformed pools, etc) function as intended? Yes

Features Comments:

Photos taken during inspection? Yes

Final Determination

Is the structure Fish Passable? No

Risks noted to stream function, refer to category:

Actions determined by Monitoring: Modifications

Inspection Action Comments:

Additional Comments:

Stream bed modification required to correct subsurface flow through structure and DS project area. Not fish passable under current conditions.

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Site Details

Site ID: 996735 Road Name: SR 3 Mile Post: 26.00

Stream: unnamed Tributory to: Mindy Cr

Monitoring Inspection Details:

Inspection Type: Other Inspection Date: 8/31/2020

Inspector(s): Heather Pittman,Tammy Schmidt

Monitoring Parameters (all intervals):

Streambed Material

Has the Site experienced a bankfull event? Yes

Is there streambed material throughout the Structure? Yes

Is there streambed material throughout the Design Channel? Yes

Freeboard 2.82 at outlet (ft) 2.69 at inlet (ft)

Compare the streambed material throughout the structure and design channel to the common condition: Coarser

Streambed Material Comments:

Freeboard at outlet is nearly identical to last measurement.

Channel Flow / Shape

Is there unusual subsurface flow compared to the common condition of the reach? Yes

Does a low-flow channel exist through the entire length of the structure and design channel: No

The depth of the channel throughout the structure and the design channel compared to the common condition of the reach is: Shallower

The channel shape throughout the structure and the design channel compared to the common condition of the reach is: Similar

Is the channel shape consistent with the design expectations? Yes

If No or Undetermined, explain:

Describe the channel path within the structure and the design channel: Braided

Does the channel contact the structure wall at any location? No

If yes, the percentage of channel length in contact is: N/A

Also, if yes, contact is: N/A

Is there a measurable BFW inside the structure? No

Bankfull Width (BFW) of the channel within the structure: (ft)

BFW inside the structure compared to the design channel: N/A

BFW inside the structure compared to the common condition: N/A

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BFW of the design channel compared to the common condition is: Similar

There is a defined channel: Through a portion of the project.

Channel Additional comments:

Surface flow through entire length of culvert today with minimal loss of volume noticed between inlet and outlet. Subsurface flow through nearly entire length of DS design channel. Subsurface flow for 10.8 m of US design channel beginning 1.5 m upstream of inlet. BFW in US design channel = 6.23'.

Streambed Slope

Streambed Slope (%) Upstream of the Structure: 7.80 Throughout the structure: 0.88

Downstream of the structure: 7.06 Overall project:

Describe streambed slope throughout the project compared to the common condition of the reach: Other

Streambed Slope Compared to Reach Comments:

Overall project slope is similar to common condition but box culvert is flatter. Culvert slope today is much flatter than previous measurements. I suspect bed slope through culvert is incorrect.

Streambed Slope Comments:

10.5% gradient for approximately 18 m US of inlet over large cobble/boulders/rock bands then drops to 6.3% to driveway crossing.

Other Details

Are there any Channel-Spanning hydraulic drops within the structure or the design channel greater than 0.50 feet? Yes

If Yes, provide comments, including descriptions of any headcutting or aggrading:

Drops over all rock bands - lack of surface flow prevented measuring WSD.

Do other Design Features (LWM, coarse bands, barbs, preformed pools, etc) function as intended? Yes

Features Comments:

Rock bands are working to hold bed regrade but offer no benefit to passage due to loss of surface flow and very small pools for resting - all of which were dry today.

Photos taken during inspection? Yes

Final Determination

Is the structure Fish Passable? No

Risks noted to stream function, refer to category:

Actions determined by Monitoring: Modifications

Inspection Action Comments:

While the structure would be considered fish passable for today's conditions, both the US and DS design channel is not due to subsurface flow inconsistent with the reach. Recommend vegetation removal from channel thalweg and modification to the design channel sections to correct subsurface flow condition.

Additional Comments:

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Attachments:

2021_0831_WSDOT_Retrofit_TechMemo_Mindytrib.pdf
HydraulicProjectApproval_MindyCr trib_996735.pdf